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(54) **Transmission of cheque images by way of a public switched telephone network**

Scheckbildübertragung mittels öffentlichen Telefonnetzes

Transmission d'images de chèques par l'intermédiaire du réseau public téléphonique commuté

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Description

Technical Field

[0001] This application relates to imaging. More spe-
cifically, this application relates to transporting images
of cheques between banking institutions and the like by
way of a public switched telephone network.

Background

[0002] Many commercial transactions involve pay-
ment for goods or services by way of a cheque. A
cheque directs a bank (the payor bank), with which one
party (the payor) has a cheque account, to pay another
party (the payee) a specified sum of money from that
cheque account. The payee then deposits the cheque
in his or her bank, which is usually referred to as the
bank of first deposit (BOFD). The BOFD, which is usu-
ally not the payor bank, then endorses the cheque, pro-
visionally credits the depositor's account with the
amount of the cheque, and either deposits the cheque
directly with the payor bank or deposits the indirectly
with the payor bank through one or more intermediaries,
such as one or more Federal Reserve Banks or other
banks or cheque clearinghouses. When the arrives at
the payor bank, it may be honored by the payor bank
which then debits the account of the payor in accord-
ance with the amount of the cheque. It may also be dis-
honored by the payor bank in which case the is returned
to the BOFD either directly or indirectly through the
same or different intermediaries which were involved in
the transfer of the cheque from the BOFD to the payor
bank.

[0003] This process involves actual physical transfer
of the cheque from institution to institution in the path
between the BOFD and the payor bank. This is a costly
labor intensive process subject to a great deal of human
error. In addition to high cost and opportunities for error,
there also is a significant time delay between the pres-
entation of a cheque at a BOFD and the arrival of that
cheque at a payor bank. There also is an additional time
delay involved before a BOFD can get notification that
a payor bank has dishonored a cheque and is returning
it to the BOFD. These time delays significantly enhance
the financial risk to banking institutions involved in
cheque clearance procedures. This is clue to Federal
banking regulations which require that funds be made
available to the cheque depositor for withdrawal within
a short time after cheque deposit.

[0004] WO 80/00759 discloses a banking system that
includes a point of acceptance (POA), an image
processing centre (IPC) and a point of payment (POP).
The IPC is geographically located as close as possible
to the POA. Images of bank documents are electroni-
cally transferred from the POA to the IPC for processing.
The associated documents are also physically shipped
to the IPC, for sorting according to the intended POP.

Information is physically transferred from the IPC to the
POP after it has been processed at the IPC.

[0005] US 4 960 981 discloses a system for making
an electronic transfer of funds. In this system, the two
parties to the transaction initially contact one another
directly and agree that one party will transfer a given
amount to the other party. Both parties then complete a
voucher giving details of the transaction and send this
voucher by facsimile to a transaction processing centre.
The transaction processing centre verifies whether the
payor's account is in a satisfactory state to make the
transfer, and also verifies the identity of the payee. Any
necessary communication between the transaction
processing centre and the parties is carried out by
means of synthesised voice telephone messages.

[0006] Provided that the transaction is authorised, the
transaction processing centre makes the transaction,
and sends both parties a facsimile confirming this.

[0007] US 4 960 981 does not relate to clearing
cheques.

[0008] The present invention provides a public
switched telephone network as defined in claim 1.

[0009] The problems associated with conventional
cheque clearance procedures involving actual transfer
of cheque between institutions can be solved by an ap-
paratus and method involving transmitting images of
cheques between those institutions. These images are
transmitted between institutions by way of a public tel-
ephone network.

[0010] In one example of the invention, a public
switched telephone network contains a cheque clear-
ance services node which receives an image of a
cheque from a first institution involved in cheque clear-
ance. The node determines the destination of the
cheque from the image itself or from data stored in the
node or data accompanying the image. The node routes
the image to another institution via the public switched
telephone network. One particularly important example
of the invention involves receiving images of dishonored
cheques in a special node in a public switched tele-
phone network and routing those images through the
network to a bank of first deposit. Rapid notification to
a bank of first deposit that a cheque has been dishon-
ored by a payor bank is thereby achieved in this example
of the invention.

Brief Description of the Drawings

[0011] FIG. 1 is a schematic diagram of an example
of a public switched telephone network in accordance
with this invention.

[0012] FIG. 2 is a more detailed diagram of specific
examples of a public switched telephone network and a
cheque image processing node both shown generally in
FIG. 1.

Detailed Description

[0013] FIG. 1 shows an example of a system for transporting images of cheques through a public switched telephone network. The image of a cheque is created in a sending institution and sent to a receiving institution by means of the public switched telephone network. Cheque images may be handled in this manner to effectuate a check clearance procedure.

[0014] The system of FIG. 1 comprises a public switched telephone network 10. The network 10 contains at least one cheque image processing node 12 which provides cheque clearance services. The node 12 receives images of cheques from a sending institution 14 transmitted through the network 10. The node 12 processes the cheque images and sends them to a receiving institution 16. The sending institution 14 is a subscriber to the telecommunications services provided by the node 12. The receiving institution 16 may or may not be a subscriber to the services of node 12. The sending institution 14 and the receiving institution 16 may be banks or other entities involved in a cheque clearing procedure. For example, the sending institution 14 may be a payor bank and the receiving institution may be a bank of first deposit which are involved in a processes of returning a cheque dishonored by institution 14 to the institution 16. Alternatively, the sending institution 14 may be a bank of first deposit which is in the process of forwarding cheques to an institution 16 which is acting as a payor bank. One or both of institutions 14 and 16 may also be any intermediary institution in the forward and reverse cheque clearance flows between a bank of first deposit and a payor bank.

[0015] The public switched telephone network 10 may be a telephone network provided by a local exchange carrier such as one of the Regional Bell Operating Companies or it may be a telephone network provided by a long distance carrier such as AT&T. Another example of a public switched telephone network 10 is the combined network provided by a local exchange carrier and a long distance carrier. The network may be either electrically or optically based or may involve combinations of those two technologies. The network may be digital or analog. Two examples of suitable digital networks are a packet network and a frame relay network, such as the existing packet and frame relay networks now provided by carriers such as AT&T.

[0016] The sending institution 14 possesses check imaging equipment 18 which produces electrical or optical signals representing the image of a cheque. The image may comprise a sequence of signals each representing some characteristic of a picture element, for example, each signal may represent the intensity or color of light reflected from a small region on the front or back surface of a cheque. The cheque imaging equipment may be any device which can create suitable graphic image signals. For example, the imaging equipment may comprise systems which scan the front face, the back face or both the front and back faces of a cheque as required, to create a series of intensity or color signals for each picture element making up the scanned surfaces of the check. The imaging equipment may be large multi-workstation systems available from companies such as IBM, UNISYS, or NCR. Alternatively, in smaller cheque clearing operations, the imaging equipment 18 may be personal computer based systems involving relatively simple video cameras and circuitry to digitize the signals from the camera.

[0017] The images produced by the equipment 18 are directed to a network interface 20 which converts the signals from the equipment 18 into signals suitable for transmission on the telephone network 10. The output of the network interface 20 is connected to one or more network access lines 22 in FIG. 1. The network access lines 22 may comprise any form of transmission line suitable for carrying the expected volume of cheque image traffic between the sending institution 14 and the telephone network 10. For example, the network access lines 22 may comprise one or more digital transmission lines operating at speeds of about 2400 bits per second to about 1.544 megabits per second or more. Connection to the network 10 may be by an ordinary dial up line or by a dedicated private line.

[0018] The signals received by the network on line 22 may be transmitted through the network 10 via one or more trunks and one or more central offices to the cheque image processing node 12 as represented schematically by a dotted line 24. The cheque image processing node 12 then routes the received cheque image via one or more trunks and one or more central offices, as represented schematically by a dotted line 26, to a network access line 28 of suitable capacity which may be the same as or different from the network access line 22. Cheque images are received in a network interface 30 in the receiving institution 16. The interface 30 transforms the signals from the network 10 into a form suitable for use by cheque image processing equipment 32 located in the receiving institution 16. The cheque image processing equipment 32 may be similar to the imaging equipment 18 located in the sending institution 14. The equipment 32 may also be facsimile equipment, character recognition equipment, e-mail systems, or any other image processing equipment by which the images received may be displayed or used by the receiving institution.

[0019] As described in more detail below in connection with the description of a specific example of the invention shown in FIG. 2, the processing node 12 receives cheque images and performs certain processing procedures on those images, including at least temporary storage of the received cheque images. One of the procedures performed on cheque images is to route them to a desired destination. The appropriate destination may be determined by the node 12 in a variety of ways. One example involves the sending institution 14 including destination identifying data along with the im-

age. That data then can be read by the node 12 to appropriately route the cheque image to its destination. The destination identifying data may be manually entered by an operator at the time the image is generated in institution 14. The data may also be entered by character recognition equipment or the like in response to the image produced by equipment 18. One alternative to the sending institution producing data relating to the destination of the cheque image is to install character recognition equipment in the cheque image processing node 12. The character recognition in the node 12 then can read the cheque image and determine its destination from certain characteristics of the image such as the endorsements on the cheque.

[0020] FIG. 2 illustrates a detailed example of a cheque image processing node 12 like the one shown in FIG. 1. FIG. 2 also shows a specific public switched telephone network in which the node 12 is located. FIG. 2 is an example of the invention involving a situation where a payor bank 34, which is a subscriber to the services provided by the cheque image processing node 12, has dishonored a cheque sent to it directly or indirectly by a bank of first deposit 36. An image of the front and back faces of the dishonored cheque is generated by the payor bank 34 and sent to a public switched telephone network in the form of a frame relay network 38. The frame relay network 38 may be the frame relay network in the AT&T switched network. The image of the dishonored cheque is sent through an appropriate path in the network 38 to the cheque image processing node 12. The node 12 accepts the images transmitted over the frame relay network 38 and uses specific subscriber data to process cheque images and retransmit those images through the network 38 to their final destination.

[0021] The node 12 contains a frame relay assembler/ disassembler 40 which receives frames of digital information representing cheque images sent by service subscribers to the network 38. The assembler/disassembler 40 also transmits frames of digital information representing cheque images to the network 38 after those images have been processed by the node 12. A node controller and router 42 controls the routing of cheque images to their intended destinations, both in the controller and to their ultimate destinations outside the network 38. The node 12 also contains a subscription interface control 44 which controls a network customer's access to the facilities in the node 12. A customer profile and destination database 46 contains information about subscribers to the services provided by the node 12 and information about all potential recipients of images handled by the node 12. A storage device 48, which may be an electronic mailbox as shown in FIG. 2, stores at least temporarily some or all of cheque images received by the node 12. A signal converter 50 contains information used by the node 12 to convert images in a format used by the sending institutions into a format understandable by the receiving institution. A work center interface 52 is connected to a work center 54. The in-

terface 52 is involved with updating customer profiles, handling billing information, and accomplishing operations, administration, and maintenance functions. A local area network 56 connects the subsystems of the node 12 described above.

[0022] The frame relay assembler/disassembler 40 controls incoming and outgoing frames of digital information representing the images of the cheque. received in the node 12. When a cheque arrives at the node 12, the assembler/disassembler 40 will assemble the frames making up the image of the cheque. For example, there may be approximately 391 frames per cheque image, depending on the size and information content of the cheque. In addition to assembly of the frames making up cheque images error detection and recovery operations may also be performed. The image of the cheque will then be passed to the node controller and router 42. The assembler/disassembler 40 may read certain overhead information accompanying the images, including frame relay flags, identifiers, address bits, indicators, and other overhead information. When cheque images leave the node 12 to go to their final destinations, the assembler/disassembler builds the frames making up each cheque image for transmission through appropriate portions of the frame relay network 38. The assembler/disassembler 40 may set flags, identifiers, indicators, and address bits under the control of the node controller and router 42.

[0023] The node controller and router 42 provides interfaces to systems external to the node 12. It is connected to all the other subsystems in the node 12 by way of the local area network 56. The controller 42 provides access to the database 46 and directs cheque images to appropriate subsystems in the node 12 connected to the local area network 56. The controller 42 also routes the cheque images from the node 12 to their ultimate destinations by way of the assembler/disassembler 40 and the frame relay network 38. The controller 42 may read some data accompanying cheque images, for example, it may identify that TCP/IP protocol information accompanying those images. That information may instruct the node 12 about the identity of the sending institution and the intended receiving institution. That information may also identify the disposition of the check, for example, it may indicate that the cheque is a return cheque dishonored by a payor bank. The controller 42 may signal the subscription interface controller 44 to extract data from the customer profile and destination database 46 which controls the processing performed on the cheque by the node 12. The controller 42 may receive instructions from the work center 54 through the interface 52 to control changes made to the information in the database 46. These changes may include the addition or changes to personal identification numbers or bank related data. The controller 42 may monitor, filter, and collect various alarms and signals from the subsystems connected to the local area network 56 to notify the work center 54 about various conditions in the node

12. High reliability may be achieved by the provision of various fault tolerant features in the node 12, for example, by the provision of appropriate backup equipment used when equipment in the node fails. The controller 42 accumulates certain statistics needed to prepare bills for telephone network users. For example, the controller 42 may count cheques, keep track of functions performed by the node 12 (i.e., numbers of conversions, storage amounts, etc.) and the origins and destinations of the cheque images for billing purposes. This information is transmitted to a billing interface shown in the work center interface 52. The controller 42 may also be configured to handle information encrypted by sending institutions to provide security for the images transported by the network 38. The controller 42 may have its own encryption and decryption equipment to provide a secure environment in the node 12.

[0024]   The subscription interface control 44 links the node 12 to a subscriber of the services provided by node 12. In addition to controlling a subscriber's access to the node 12, it controls the sending of information from the database 46 about the customer and the disposition and process requirements for each cheque to the controller 42. The control 44 may receive a login personal identification number and other security identifiers deemed necessary. It will check these against a customer profile and allow access to the node when they are correct. The control 44 checks a profile of a destination bank stored in the database 46 to determine how the cheque should be processed and stored. This information is transmitted to the node controller and router 42. The interface controller 44 controls all additions, deletions, and changes to the customer data in the database 46.

[0025]   The database 46 contains two types of data, data relating to subscribers to the services of node 12 and data relating to banks and other potential destinations which do not subscribe to the services of the node 12. Examples of data which will be stored for each subscriber may include:

1. A personal identification number (PIN);

2. A subscriber's destination address which may be similar to those used in electronic funds transfer;

3. Information relating to protocols used by the equipment of the subscriber which creates the cheque images and information relating to any compression algorithms used by that equipment for transmitting images over the network;

4. Requirements of the subscriber regarding the storage of cheque images in the node;

5. Information about the times at which cheque images should be transmitted to the subscriber;

6. Default destinations to be used in the event that

equipment on the subscribers premises should fail; and

7. Levels of subscriber service.

[0026]   Data for nonsubscribers, for example, nonsubscription destination banks, are required because subscribers may wish to route cheque images to such nonsubscribers. Data requirements for such entities may differ from those of subscribers. For example, nonsubscribers may not have frame relay customer premises equipment, equipment to reconstruct the cheque images, or encryption devices to properly accept encrypted data. Cheque images may have to travel to such entities over normal switched access lines or a hard copy must be created to be physically sent to such entities. Data for nonsubscribers may include:

1. A destination address similar to those used in electronic funds transfer;

2. A delivery code indicating the method of cheque delivery to be used, for example, a delivery code indicating whether frame relay or imaging equipment is available;

3. A fax number if delivery of cheque images is to be made by facsimile or a mailing address if delivery is to be made by post;

4. Storage requirements;

5. The time of day at which cheques should be transmitted; and

6. A default destination in the event of a failure in the destination's premises equipment.

[0027]   The storage device 48 may be a rewritable mass storage device which can at least temporarily store or archive compressed or uncompressed cheque images prior to transmission to their destinations. The storage means may be an optical disk drive or a magnetic disk drive depending on the needed file size and required access speed. A subscriber's cheque images will be stored in the storage device 48 if the subscriber elects this option. The customer will also specify a time-to-transmit threshold which is stored in the customer profile and destination database 46. This allows the customer to receive cheque images at convenient times of the day rather than sporadically. The customer may also elect to temporarily store cheque images during emergencies such as during a failure of the customer's premises equipment. The customer may also elect alternate delivery methods, such as facsimile or mail, when the customer's premises equipment fails. In addition to temporary storage of cheque images, the storage mechanism 48 may be configured to provide long term

archiving of cheque images if elected by the customer. In one example of the invention, cheque images may be stored in the storage device 48 for a period of time sufficient to allow the item to clear normally. In all cases, the treatment of the cheque image by node 10 may be indicated in a customer profile stored in database 46, as described above.

[0028] Since there are no universally adopted standards regarding imaging formats and compression standards, the node 12 contains a signal converter 50 which converts signals received by the node 12 in one format used by a sender into another format usable by a recipient. The converter 50 uses information stored in the database 46 regarding the formats and compression algorithms involved. This information will be relayed from the database 46 to the signal converter 50 by the node controller 42. The converter 50 may contain multi-vendor image format and compression processors which can uncompress and reconstruct images from one imaging system to another.

[0029] The work center interface 52 provides external interfaces to the work center 54. The contents of the database 46 may be changed or updated through a subscriber interface in the interface 52. Service orders may be placed to accomplish this process. Certain aspects of a billing record may be produced by the node 12. For example, information about the number of cheques processed, converted, stored, and transmitted will be maintained by the node controller 42. A billing interface in the interface 52 will periodically poll the node controller 42 for this information and will transmit this information to an appropriate downstream billing center. An operations, administration, and maintenance interface in the interface 52 will send all alarms, status checks, and reports of certain events to the work center 54.

[0030] In the example of the invention shown in FIG. 2, the payor bank 34 creates an image of each cheque it has dishonored. The image comprises a plurality. of frames of digital information. The frames are sent to the node 12 in the frame relay network 38 and are assembled in the assembler/disassembler 40. The node controller and router 42 then may send the image to the storage device 48 and afterward read the image out of the storage device 48 and route it through the assembler/disassembler 40 and portions of the network 38 to a bank of first deposit 36 to notify that bank that the cheque has been dishonored. The behavior of the controller 42 in directing the cheque image to the storage device 48 and routing the image to its destination may be controlled by data accompanying the cheque image, data derived from the image, or data about the subscriber and the intended destination stored in the database 46. Although FIG. 2 has been described as a situation involving the return of dishonored cheque images from a payor bank to a bank of first deposit, the principles embodied in the circuitry shown in FIG. 2 may readily be applied to any situation requiring a transfer of a cheque image from one institution to another institution

in the course of carrying out a cheque clearance procedure, including transferring cheque images in a forward flow path from a bank of first deposit to a payor bank.

[0031] In summary, this application describes a network based cheque clearing service which handles the routing, sorting, delivery, and storage of interbank cheque images to effectuate a cheque clearing procedure. The described method of clearing a cheque utilizing a public switched telephone network and images of cheques may completely replace conventional cheque clearance procedures involving the physical transfer of cheques between institutions. The described method may also be used in conjunction with actual physical transfer of cheques to act as speedy notification of the flow of actual cheques through the clearance system. Use of the described apparatus and method of clearing cheques will have significant benefits for users. The entire notification process will be speeded up. The information available to payor banks, banks of first deposit, and intermediaries will be improved. The risks to the institutions will be reduced and the costs of processing cheques will be lowered. Banks of first deposit will be able to improve customer service by the increased timeliness with which it notifies its deposition of dishonored cheques.

Claims

1. A public switched telephone network (10), **characterised in that** it comprises at least one cheque clearance services node (12) for receiving an image of a cheque from a cheque clearance service subscriber banking institution (14) connected to the network and for routing that image to a recipient banking institution (16) connected to the network;

   wherein the cheque clearance services node (12) comprises means (44) for receiving identification data from a subscriber banking institution to the cheque clearance service, for validating the received identification data and ascertaining the receiving banking institution to which the cheque image is to be routed, and means for, if the results of the validation are satisfactory, routing the validated cheque image to the recipient banking institution.

2. A network as claimed in claim 1, wherein the network comprises a public switched telephone network provided by a local exchange carrier, or a long distance public switched telephone network, or a long distance public switched telephone network accessed by way of a public switched telephone network provided by a local exchange carrier, or a packet network, or a frame relay network, or a circuit switched network.

3. A network as claimed in claim 1 or 2, wherein the subscriber is connected to the network by way of a

dial up connection, or by a dedicated private connection, or by way of a digital connection operating at a bit rate of 2400 bits per second to about 1.544 megabits per second.

4. A network as claimed in claim 1, 2 or 3, wherein the node comprises means (46) for storing information relating to customer profiles and destinations of cheque images.

5. A network as claimed in claim 1, 2, 3 or 4, wherein the node comprises means (48) for storing images of cheques for predetermined time periods.

6. A network as claimed in claim 4 or 5, wherein the node comprises means (44) for controlling access to information in the storing means.

7. A network as claimed in any proceeding claim wherein the node comprises means (50) for converting signals produced by the subscriber in a first format to signals for the recipient in a second format.

8. A network as claimed in claim 7, wherein the converting means comprises means for converting signals produced by the subscriber in accordance with a first encryption algorithm to signals encrypted in accordance with a second encryption algorithm for the recipient.

9. A network as claimed in any preceding claim wherein the node comprises a node controller (42) for controlling the operation of the node and for routing received cheque images to intended destinations in the node and in the public switched telephone network.

10. A network as claimed in claim 1, 2 or 3, wherein the node comprises a storage device (48) for storing a plurality of cheque images received by the node, a database (46) containing information relating to each of the subscribers to the services provided by the node and information about potential recipients of cheque images from the node, and a node controller (42) which is responsive to information contained in the database for storing cheque images in the storage device and routing cheque images to recipients through the public switched telephone network.

11. A network as claimed in claim 1, wherein the subscribers comprise banks of first deposit, or payor banks, or banks of first deposit and payor banks.

12. A network as claimed in claim 1, wherein at least one of the subscribers and recipients is an institution intermediate a payor bank and a bank of first deposit in a cheque clearing procedure.

13. A network as claimed in any preceding claim, wherein the images are images of cheques dishonored by payor banks in cheque clearance procedures.

Patentansprüche

1. Öffentliches Telefonvermittlungsnetz (10), **dadurch gekennzeichnet**, dass es wenigstens einen Scheckfreigabe-Dienstknoten (12) zum Empfangen eines Bilds eines Schecks von einer Scheckfreigabedienst-Teilnehmerbankinstitution (14), die mit dem Netz verbunden ist, und zum Lenken dieses Bilds an eine Empfänger-Bankinstitution (16), die mit dem Netz verbunden ist, umfasst;
   wobei der Scheckfreigabe-Dienstknoten (12) eine Einrichtung (44) zum Empfangen von Identifikationsdaten von einer Teilnehmer-Bankinstitution an dem Scheckfreigabedienst, zum Überprüfen der empfangenen Identifikationsdaten und zum Feststellen der empfangenden Bankinstitution, an die das Scheckbild gelenkt werden soll, und eine Einrichtung, um dann, wenn die Ergebnisse der Überprüfung zufriedenstellend sind, das überprüfte Scheckbild an die Empfänger-Bankinstitution zu senden, umfasst.

2. Netz nach Anspruch 1, wobei das Netz ein öffentliches Telefonvermittlungsnetz, das von einem Ortsvermittlungsbetreiber bereitgestellt wird, oder ein öffentliches Telefonfernvermittlungsnetz, oder ein öffentliches Telefonfernvermittlungsnetz, auf das über ein öffentliches Telefonvermittlungsnetz zugegriffen wird, welches von einem Ortsvermittlungsbetreiber bereitgestellt wird, oder ein Paketnetz, oder ein Rahmenweitergabenetz, oder ein leibingsvermitteltes Netz umfasst.

3. Netz nach Anspruch 1 oder 2, wobei der Teilnehmer mit dem Netz mit Hilfe einer Anwählleitung oder durch eine speziell vorgesehene private Verbindung oder über eine digitale Verbindung, die bei einer Bitrate von 2400 Bits pro Sekunde bis ungefähr 1,544 Megabits pro Sekunde arbeitet, verbunden ist.

4. Netz nach Anspruch 1, 2 oder 3, wobei der Knoten eine Einrichtung (46) zum Speichern von Information, die sich auf Kundenprofile und Zielstellen von Scheckbildern bezieht, umfasst.

5. Netz nach Anspruch 1, 2, 3 oder 4, wobei der Knoten eine Einrichtung (48) zum Speichern von Scheckbildern für vorgegebene Zeitperioden umfasst.

6. Netz nach Anspruch 4 oder 5, wobei der Knoten eine Einrichtung (44) zum Steuern eines Zugriffs auf Information in der Speichereinrichtung umfasst.

7. Netz nach irgendeinem vorangehenden Anspruch, wobei der Knoten eine Einrichtung (50) zum Umwandeln von Signalen, die von dem Teilnehmer erzeugt werden, in einem ersten Format in Signale für den Empfänger in einem zweiten Format umfasst.

8. Netz nach Anspruch 7, wobei die Umwandlungseinrichtung eine Einrichtung zum Umwandeln von Signalen, die von dem Teilnehmer in Übereinstimmung mit einem ersten Verschlüsselungsalgorithmus erzeugt werden, in Signale, die in Übereinstimmung mit einem zweiten Verschlüsselungsalgorithmus für den Empfänger verschlüsselt sind, umfasst.

9. Netz nach irgendeinem vorangehenden Anspruch, wobei der Knoten eine Knoten-Steuereinrichtung (42) zum Steuern des Betriebs des Knotens und zum Lenken von empfangenen Scheckbildern an beabsichtigte Zielstellen in dem Knoten und in dem öffentlichen Telefonvermittlungsnetz umfasst.

10. Netz nach Anspruch 1, 2 oder 3, wobei der Knoten eine Speichereinrichtung (48) zum Speichern einer Vielzahl von Scheckbildern, die von dem Knoten empfangen werden, eine Datenbank (46), die Information in Bezug auf jeden der Teilnehmer an den Diensten, die von dem Knoten bereitgestellt werden, und Information über potentielle Empfänger von Scheckbildern von dem Knoten enthält, und eine Knoten-Steuereinrichtung (42), die auf Information anspricht, die in der Datenbank enthalten ist, zum Speichern von Scheckbildern in der Speichereinrichtung und Lenken von Scheckbildern an Empfänger durch das öffentliche Telefonvermittlungsnetz, umfasst.

11. Netz nach Anspruch 1, wobei die Teilnehmer Banken einer ersten Hinterlegung, oder Zahlungsgeber-Banken, oder Banken einer ersten Hinterlegung und Zahlungsgeber-Banken umfassen.

12. Netz nach Anspruch 1, wobei wenigstens einer der Teilnehmer und Empfänger eine Institution ist, die zwischen einer Zahlungsgeber-Bank und einer Bank einer ersten Hinterlegung bei der Scheckfreigabeprozedur ist.

13. Netz nach irgendeinem vorangehenden Anspruch, wobei die Bilder Bilder von Schecks sind, die von Zahlungsgeber-Banken bei Scheckfreigabeprozeduren nicht eingelöst werden.

Revendications

1. Réseau de téléphone commuté public (10), **caractérisé en ce qu'**il comprend au moins un noeud de services de compensation de chèques (12) pour recevoir une image d'un chèque depuis une institution bancaire d'abonnés au service de compensation de chèques (14) qui est connectée au réseau et pour aiguiller cette image jusqu'à une institution bancaire récipiendaire (16) qui est connectée au réseau,

dans lequel le noeud de services de compensation de chèques (12) comprend un moyen (44) pour recevoir des données d'identification en provenance d'une institution bancaire d'abonnés au service de compensation de chèques, pour valider les données d'identification reçues et pour vérifier l'institution bancaire de réception jusqu'à laquelle l'image de chèque doit être aiguillée et un moyen pour, si les résultats de la validation sont satisfaisants, aiguiller l'image de chèque validée jusqu'à l'institution bancaire récipiendaire.

2. Réseau selon la revendication 1, dans lequel le réseau comprend un réseau de téléphone commuté public fourni par une entreprise de télécommunication de centraux locaux, ou un réseau de téléphone commuté public longue distance, ou un réseau de téléphone commuté public longue distance qui est accédé au moyen d'un réseau de téléphone commuté public fourni par une entreprise de télécommunication de centraux locaux, ou un réseau par paquets, ou un réseau relais répartiteur, ou un réseau à commutation de circuits.

3. Réseau selon la revendication 1 ou 2, dans lequel l'abonné est connecté au réseau au moyen d'une connexion par numérotation ou au moyen d'une connexion privée dédiée ou au moyen d'une connexion numérique fonctionnant à un débit binaire de 2400 bits par seconde jusqu'à environ 1,544 mégabits par seconde.

4. Réseau selon la revendication 1, 2 ou 3, dans lequel le noeud comprend un moyen (46) pour stocker une information se rapportant à des profils de clients et à des destinations d'images de chèque.

5. Réseau selon la revendication 1, 2, 3 ou 4, dans lequel le noeud comprend un moyen (48) pour stocker des images de chèques pendant des périodes temporelles prédéterminées.

6. Réseau selon la revendication 4 ou 5, dans lequel le noeud comprend un moyen (44) pour contrôler un accès à une information dans le moyen de stockage.

7. Réseau selon l'une quelconque des revendications

précédentes, dans lequel le noeud comprend un moyen (50) pour convertir des signaux qui sont produits par l'abonné dans un premier format selon des signaux pour le récipiendaire dans un second format.

8. Réseau selon la revendication 7, dans lequel le moyen de conversion comprend un moyen pour convertir des signaux qui sont produits par l'abonné conformément à un premier algorithme de cryptage selon des signaux cryptés conformément à un second algorithme de cryptage pour le récipiendaire.

9. Réseau selon l'une quelconque des revendications précédentes, dans lequel le noeud comprend un contrôleur de noeud (42) pour contrôler le fonctionnement du noeud et pour aiguiller des images de chèque reçues jusqu'à des destinations attendues dans le noeud et dans le réseau de téléphone commuté public.

10. Réseau selon la revendication 1, 2 ou 3, dans lequel le noeud comprend un dispositif de stockage (48) pour stocker une pluralité d'images de chèque reçues par le noeud, une base de données (46) qui contient une information se rapportant à chacun des abonnés aux services assurés par le noeud et une information concernant des récipiendaires potentiels d'images de chèque en provenance du noeud, et un contrôleur de noeud (42) qui est sensible à une information qui est contenue dans la base de données pour stocker des images de chèque dans le dispositif de stockage et pour aiguiller des images de chèque jusqu'à des récipiendaires par l'intermédiaire du réseau de téléphone commuté public.

11. Réseau selon la revendication 1, dans lequel les abonnés comprennent des banques de premier dépôt ou des banques de paiement ou des banques de premier dépôt et des banques de paiement.

12. Réseau selon la revendication 1, dans lequel soit les abonnés, soit les récipiendaires, soit les deux sont une institution qui est un intermédiaire entre une banque de paiement et une banque de premier dépôt dans une procédure de compensation de chèques.

13. Réseau selon l'une quelconque des revendications précédentes, dans lequel les images sont des images de chèques non honorés par des banques de paiement lors de procédures de compensation de chèques.
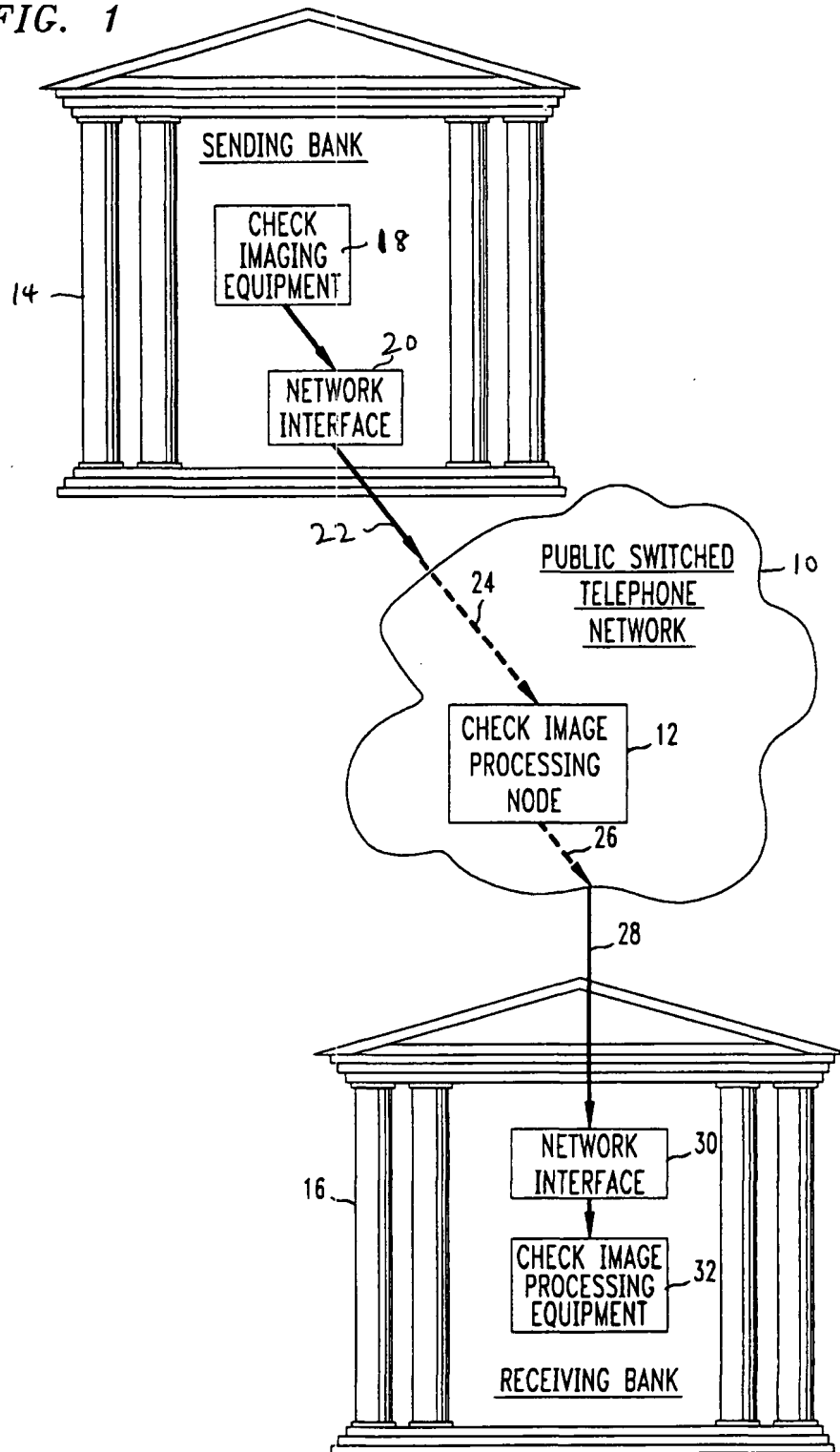
FIG. 1

FIG. 2